



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/996,320	11/21/2001	Saad A. Sirohey	GEMS:0166/YOD(31-IS-6171)	3586

7590 03/21/2006
Tait R. Swanson
Fletcher, Yoder & Van Someren
P.O. Box 692289
Houston, TX 77269-2289

EXAMINER

CHEN, WENPENG

ART UNIT	PAPER NUMBER
----------	--------------

2624

DATE MAILED: 03/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/996,320	Applicant(s) SIROHEY ET AL.	
	Examiner Wenpeng Chen	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-19,21-24 and 26-86 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-19,21-24 and 26-86 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/21/05</u> . | 6) <input type="checkbox"/> Other: _____ |

Examiner's responses to Applicant's remark

1. Applicants' amendments filed on 12/19/2005 overcome the followings set forth in paper #20050914:

- objection to Claim 73 (paragraph 6);
- rejection to Claims 74-86 under 35 U.S.C. 112, second paragraph (paragraph 8).

2. Applicants' arguments with regard to Claims 1, 29, 50, and 73 have been fully considered but are moot in view of the new ground(s) of rejection due to Applicants' amendments to the listed claims.

3. To provide a better understanding of Examiner's rejection in the present Office Action, the Examiner's response to Applicants key argument is provided below.

In Applicants' remarks, Applicants specifically argued that Dekel does not teach that the feature that "the data sets are stored in a compressed form on a server prior to receipt of a request from a client." The Examiner disagrees. In passages in column 4, line 51 to column 5, line 10, column 5, lines 23-48, column 22, line 36 to column 23, line 28, Dekel teaches the feature. For example, for each such request the server 120 checks if the corresponding data block already exists in the cache 121. If not, the server 120 then computes the data block, stores it in the cache 121. The server 120 is able to cache (in cache 121) any computed data block, such that this data block can be sent to any other client 110 that requests it. Server 120 reads from cache 121 or

Art Unit: 2624

encodes data block. Evidently, in some of Dekel's applications the computed (namely compressed as in Dekel) data blocks are stored in cache 121 before any other client requests it.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-2, 4-5, 7-19, 21-24, 26-63, and 73-86 are rejected under 35 U.S.C. 102(e) as being anticipated by Dekel et al. (US patent 6,314,452.)

a. For Claims 1-2, 4-5 and 7-19, 21-24, 26-28, Dekel teaches a method for selectively transferring image data, the method comprising:

-- for Claim 1, selecting an image resolution suitable for display in a desired viewport, wherein the image resolution corresponds to one set of a plurality of data sets decomposed from an image by lossless wavelet decomposition; (column 5, line 60 to column 6, line 61; column 15, line 39 to column 16, line 9; column 16, lines 37-57; column 22, lines 38-48; column 24, lines 17-21 and 58-65; Scale which is associated with view resolution for display is selected by the client. Reversible wavelet transforms produce lossless wavelet decomposition.)

-- for Claim 1, selectively requesting a portion of the plurality of data sets for recomposition of the image at the image resolution, the portion of the plurality of data sets being

Art Unit: 2624

smaller than the plurality of data sets wherein selectively requesting the portion comprises requesting a data stream comprising the portion of the plurality of data sets arranged sequentially in a desired order based on the lossless wavelet decomposition, *wherein the data sets form part of an image data file that is losslessly wavelet decomposed and that is stored in a losslessly compressed form on a server prior to receipt of a request from a client*; (column 5, lines 24-47; column 16, lines 38-57; column 19, line 18 to column 22, line 38; column 22, line 38 to column 23, line 6; column 5, lines 24-33; column 15, lines 39-60; column 16, lines 16-29; Progress By Resolution mode; column 20, lines 28-46; Data based on the client's request list are retrieved from the server to client for rendering to the specified resolution. Only part of the total data set is requested and retrieved. When transmission is broken, less than the entire data are transmitted. Passages in column 24, lines 59-64 and column 28, lines 10-60 teach *losslessly wavelet decomposition*. Each of the plurality of data sets is compressed by lossless compression as shown in column 24, lines 17-21; column 28, line 62 to column 29, line 53. Lossless transmission requires every step to lossless, including all compression. Please also see Examiner's response above.)

-- for Claim 2, wherein the lossless wavelet decomposition comprises lossless integer wavelet decomposition; (column 24, lines 59-64; column 28, lines 10-60)

-- for Claim 4, wherein the acts of selecting the image resolution and selectively requesting the portion are executed automatically; (column 15, lines 17-37; The client's action of zoom-in on a GUI makes the client's imaging module to generate automatically the selection of resolution and the retrieval of the selected portions of data.)

-- for Claim 5, wherein each of the data sets comprises a hierarchical set of sub-bands, one set comprising a low frequency component at a lowest resolution level and each remaining set comprising high frequency components at successively higher resolution levels; (column 5,

line 48 to column 6, line 19; column 8, line 57 to column 9, line 33; Data of a coding block is a data set that comprises a hierarchical set of sub-bands.)

-- for Claim 7, wherein selecting the image resolution comprises selecting the image resolution from a plurality of progressively higher resolution levels, each corresponding to one of the plurality of data sets; (column 6, lines 7-19; column 15, lines 45-60; column 19, lines 18-52; Data of selected $t_resolution$ are selected and retrieved. The data with $t_resolution$ larger than 1 are data of a plurality of progressively higher resolution levels.)

-- for Claim 8, wherein selecting the image resolution comprises identifying a lowest suitable one of the plurality of progressively higher resolution levels that does not require upward scaling beyond a desired scaling threshold for display in the desired viewport; (column 20, lines 6-17; The required resolution is just above the resolution of ROI. There is no need of upward scaling.)

-- for Claim 9, wherein identifying the lowest suitable one comprises evaluating a highest local resolution level of the plurality of progressively higher resolution levels; (column 5, lines 24-47; column 15, lines 17-37; section 5.1; column 19, lines 64-66; Data blocks stored in the client cache are evaluated and a highest local resolution level stored at the client is determined for deciding the request list.)

-- for Claim 10, wherein selectively requesting the portion comprises recalling the highest local resolution level, which is the lowest suitable one; (column 5, lines 1-47; column 15, lines 17-28; section 5.1; column 23, lines 11-28; column 23, lines 32-43; When a client views a low resolution ROI first, the client selects and stores data blocks up to the highest local resolution level for the low resolution, which is the lowest suitable one for rendering the low resolution ROI.. When the client decides to zoom into a high resolution, the data blocks up to the highest local resolution level already stored in the client cache are recalled.)

-- for Claim 11, wherein selectively requesting the portion comprises remotely retrieving the lowest suitable one, and any resolution levels between the highest local resolution level and the lowest suitable one, from remote storage; (column 5, lines 1-47; column 15, lines 17-28; section 5.1; column 23, lines 11-28; column 23, lines 32-43; When a client zooms to view a high resolution ROI, the lowest suitable one is associated with rendering the high resolution ROI in this case. Because data blocks are stored and available at the client up to the highest local resolution level for rendering the corresponding low resolution version, any resolution levels between the highest local resolution level stored in the client cache and the lowest suitable one for rendering the high resolution version are retrieved from remote storage in the server.)

-- for Claims 12 and 13, wherein selecting the image resolution comprises zooming the desired viewport toward a desired viewport resolution, wherein zooming the desired viewport comprises zooming the desired viewport inwardly toward a spatial region of interest; (column 15, lines 17-28; column 15, line 60 to column 16, line 9; column 27, lines 37-43; New ROI view parameters are called during a zoom-in process for a desired viewport resolution.)

-- for Claim 14, wherein selectively requesting the portion comprises: identifying a highest local resolution level corresponding to a highest locally stored set of the plurality of data sets; and locating the image resolution selected; (column 5, lines 1-47; column 15, lines 17-28; section 5.1; column 23, lines 11-28; column 23, lines 32-43; When a client views a low resolution ROI first, the client selects and stores data blocks up to the highest local resolution level, which is the for rendering the low resolution ROI.. When the client decides to zoom into a high resolution, the image resolution is selected and located from a server.)

-- for Claim 15, wherein locating comprises: identifying a remote storage location if the image resolution exceeds the highest local resolution level; and requesting from the remote storage location a group of the plurality of data sets comprising the one set and any sets of the plurality of data sets corresponding to resolution levels between the highest local resolution level

Art Unit: 2624

and the image resolution selected; (column 5, lines 1-47; column 15, lines 17-28; section 5.1; column 23, lines 11-28; column 23, lines 32-43; Because data blocks are stored and available at the client up to the highest local resolution level for rendering the low resolution version, any resolution levels between the highest local resolution level stored in the client cache and the image resolution selected are retrieved from remote storage in the server.)

-- for Claim 16, identifying a local storage location if the highest local resolution level exceeds the image resolution selected; and recalling the portion from the local storage location; (column 15, lines 17-28; When data blocks of the highest local resolution level stored in the client cache have resolution exceeding the image resolution selected, data are recalled from the client cache. No request of data from the server is needed.)

-- for Claim 17, wherein zooming the desired viewport comprises zooming the desired viewport outwardly for viewing a relatively broader region of interest; (column 15, lines 15-67; The client can select any ROI. When parameter wordPolygon is changed from a small area to an expanded area, it is an outward zooming.)

-- for Claim 18, wherein selectively requesting the portion comprises using a highest local resolution level corresponding to a locally stored group of the plurality of data sets for zooming the desired viewport outwardly; (column 15, lines 17-28; For an outward zooming, the viewport resolution is reduced. In this case, data blocks of the highest local resolution level stored in the client cache have resolution exceeding the new resolution, data associated with the old viewing condition are recalled from the client cache. No request from the server is needed for that portion of data.)

-- for Claim 19, scaling the image resolution to fit the desired viewport; (column 15, lines 60-67; column 20, lines 13-26; column 22, lines 23-35; column 23, lines 12-28)

Art Unit: 2624

-- for Claim 21, wherein the desired order comprises an order of increasing resolution; (column 5, lines 24-33; column 15, lines 39-60; column 16, lines 16-29; Progress By Resolution mode)

-- for Claim 22, wherein requesting the data stream comprises obtaining image characteristics disposed in a header of the data stream; (column 24, lines 11-16; column 10, lines 17-22)

-- for Claim 23, wherein the image characteristics comprise a quantity of the plurality of data sets, a resolution of each data set, and a compressed size of each data set; (column 23, line 43 to column 25, line 62; column 10, lines 17-22; Parameter losslessMode indicates a quantity. Parameter numberOfResolution is related to a resolution. A compressed size of each data set is shown in column 31, lines 7-13.)

-- for Claim 24, reading the image characteristics disposed in the header during retrieval of the data stream for selectively retrieving the portion; (column 19, lines 20-51; The header information (t_x, t_y, t_resolution) is read for each data block.)

-- for Claim 26, storing the portion in local storage; (column 5, lines 23-59; column 15, lines 15-37)

-- for Claim 27, recomposing the image at the image resolution by combining the portion retrieved from remote storage with a local portion of the plurality of data sets stored in local storage; (column 5, lines 23-59; column 15, lines 15-37)

-- for Claim 28, wherein the recomposing the image at the image resolution comprises executing reverse wavelet decomposition on a group of the data sets ranging from a lowest resolution level to the image resolution, wherein the group comprises the portion and the local portion. (column 5, lines 23-59; column 15, lines 15-37; column 21, line 57 to column 22, line 3)

b. For Claims 29-49, Dekel further teaches:

Art Unit: 2624

-- for Claim 29, determining a viewport resolution of a client viewport; (column 15, lines 60-67; column 23, lines 11-28)

-- for Claim 29, (a) identifying a highest local resolution level corresponding to one local set of a plurality of decomposed image sets generated from an image by lossless wavelet decomposition, (b) selecting an acceptable image resolution for display in the client viewport by comparing the viewport resolution against progressively higher resolution levels corresponding to the plurality of decomposed image sets, and (c) remotely retrieving desired sets of the plurality of decomposed image sets for recomposing the image at the acceptable image resolution, *wherein the decomposed image sets form part of an image data file that is losslessly wavelet decomposed and that is stored in a losslessly compressed form on a server prior to receipt of a request from a client for data of the image sets*; (column 5, lines 1-47; column 15, lines 17-28; section 5.1; column 23, lines 11-28; column 23, lines 32-43; Because data blocks are stored and available at the client up to the highest local resolution level for rendering the low resolution version, any resolution levels between the highest local resolution level stored in the client cache and the image resolution selected are retrieved from remote storage in the server. Passages in column 24, lines 59-64 and column 28, lines 10-60 teach *losslessly wavelet decomposition*. Each of the plurality of data sets is compressed by lossless compression as shown in column 24, lines 17-21; column 28, line 62 to column 29, line 53. Lossless transmission requires every step to lossless, including all compression. Please also see Examiner's response above.)

-- for Claim 35, wherein remotely retrieving desired sets comprises requesting the desired sets from a remote server via a network. (Fig. 1)

With the above-cited teaching and comparing Claims 29-49 with Claims 1-2, 4-7 and 8-19, 21-24, 26-28, one can conclude that Dekel also teaches the method recited in Claim 29-49 as evident with the cited Dekel's passages in supporting rejections of Claims 1-2, 4-7 and 8-19, 21-24, 26-28.

Art Unit: 2624

For Claims 50-63, Dekel further teaches a system including client workstations to carries out the methods recited for Claims 1-2, 4-7 and 8-19, 21-24, 26-49.

With the above-cited teaching and comparing Claims 1-2, 4-7 and 8-19, 21-24, 26-49 with Claims 50-63, one can conclude that Dekel also teaches the system recited in Claim 50-63 as evident with the cited Dekel's passages in supporting rejections of Claims 1-2, 4-7 and 8-19, 21-24, 26-49.

c. For Claims 73-86, Dekel further teaches a computer program stored in a machine readable medium to carry out the method recited in Claims 1-2, 4-7 and 8-19, 21-24, 26-49. (column 4, lines 17-30; Claims 41-42)

With the above-cited teaching and comparing Claims 1-2, 4-7 and 8-19, 21-24, 26-49 with Claims 73-86, one can conclude that Dekel also teaches the system recited in Claim 73-86 as evident with the cited Dekel's passages in supporting rejections of Claims 1-2, 4-7 and 8-19, 21-24, 26-49.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2624

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dekel et al. (US patent 6,314,452) as applied to Claim 5, and further in view of Sodagar et al. (US patent 6,157,746.)

Dekel teaches the parent Claim 5.

However, Dekel does not teach the feature related different coding for low-frequency and high-frequency components.

Sodagar teaches a wavelet compression system and method, comprising:

-- compressing the high-frequency components using actual values, and compressing the low frequency component at the lowest resolution level using prediction errors. (column 18, lines 3-24)

It is desirable to improve coding efficiency. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to apply Sodagar's teaching of coding Dekel's LL band with predicting error in Dekel's compression system and method because the combination improves coding efficiency of LL band and thus the whole image.

8. Claims 64-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dekel et al. (US patent 6,314,452) as applied to Claim 50, and further in view of Cooke, Jr. et al. (US patent 6,574,629.)

Dekel teaches the parent Claim 50. Dekel also teaches the limitation recited in Claim 72 as discussed above.

However, Dekel does not teach a picture archiving and communication system (PACS) or imaging systems recited in the above-listed claims.

Art Unit: 2624

Cooke teaches PACS system, comprising:

-- a PACS system; (column 33, lines 28-40)

-- an MRI system, a computed tomography system, a positron emission tomography system, a radio fluoroscopy system, a computed radiography system, and an ultrasound system; (Fig. 1; column 9, line 66 to column 10, line 51; column 34, lines 1-20)

-- compression image data for storage, transmission, and retrieval. (column 9, line 66 to column 10, line 51; column 13, line 61 to column 14, line 5)

It is desirable to decode a localized portion of a medical image efficiently for viewing and analysis. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to apply Dekel's compression system and method to compress various images used in Cooke's PACS system because the combination facilitates retrieval interested regions in medical images for medical analysis.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

Art Unit: 2624

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wenpeng Chen whose telephone number is 571-272-7431. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 571-272-7778. The fax phone numbers for the organization where this application or proceeding is assigned are 571-273-8300 for regular communications and 571-273-8300 for After Final communications. TC 2600's customer service number is 571-272-2600.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

Wenpeng Chen
Primary Examiner
Art Unit 2624



March 17, 2006